Amendment to the Specification:

On page 7 of the Specification, please amend the paragraphs at lines 7-10 to read:

~~FIG. 6 depicts~~ FIGs. 6A-B depict generalized replicating monomer units assembling on a template according to an embodiment of the present invention;

~~FIG. 7 illustrates~~ FIGs. 7A-B illustrate two-component nanoparticle cross-linking and replication according to an embodiment of the present invention;

On page 20 of the Specification, please amend the paragraph at lines 21-29 to read:

Replication system based on nanoparticles. The present invention may be extended to replication of two-dimensional assemblies of nanoparticles, an example that is also instructive as to the requirements for replication of monolayers according to the present invention. The basic requirements of a replication system based on nanoparticles are depicted in FIGs. 6A-B ~~FIG. 6~~. The key component of the replicating system is generalized replicating monomer unit 610. Choices regarding patterning to form the initial template, as well as the replication cycle, are determined at least in part by the make-up of replicating monomer unit 610.

On page 21 of the Specification, please amend the paragraph at lines 1-11 to read:

As shown in FIGs. 6A-B ~~FIG. 6~~, monomer unit 610 is built on inorganic or organic nanoparticle 612 to which multiple Crosslinkers 615 are attached. The number of Crosslinkers 615 attached to nanoparticle 612 may vary, but monomer unit 610 should have the ability to cross-link with more than 2 adjoining monomer units in the two-dimensional matrix. In addition, monomer unit 610 must incorporate Recognition Element 620 capable of binding to template 640 reversibly (yet strongly enough to form a complete monolayer on the template), in order that

a replication cycle can be performed. As multiple replicating monomer units 610 assemble on template 640 in the xy plane, it is important that they be able to crosslink 615 in multiple directions and not just form chains. This allows formation of a robust sheet that replicates the pattern.

On page 22 of the Specification, please amend the two paragraphs at lines 1-19 to read:

For example, one of the monomers (A) may possess epoxides or other relatively electrophilic moieties within the ligand shell of a nanoparticle, as seen in FIGs. 7A-B ~~FIG. 7~~. The other monomer unit (B) then should possess nucleophilic moieties within its ligand shell that are expected to react with monomer (A) upon close proximity. However, such reaction is normally slow when the two monomers are simply dissolved in the same solution. Only when they enter a phase involving intimate contact and close packing (such as occurs within a monolayer) do these groups react. There is some precedent for this application within the realm of nanoparticle chemistry, as it is often the case that nanoparticles are stable in solution but irreversibly agglomerate in the solid phase (Leff et al., *Langmuir* 12: 4723-4730 (1996)). Both monomers (A) and (B) contain the same recognition chemistry, and distribute evenly across a template surface, giving on average an ensemble mixture of (A) and (B) which may form a cross-linked sheet.

~~FIG. 7 depicts~~ FIGs. 7A-B depict an especially robust four-hydrogen bond self-complementary recognition motif that is useful for large replicating monomers. In FIG. 7A ~~7~~, methylene chains 710 shield electrophilic amines 720 from epoxide units 730 while in the solution phase. ~~Once~~ As seen in FIG. 7B, once on template 750 with exposed quadruple hydrogen-bonding groups 760, methylene chains 710 intercalate, and amines 720 and epoxides 730 react to create a crosslinked sheet.

On pages 22-23 of the Specification, please amend the paragraph at page 22, line 20, to page 23, line 4 to read:

Nanoparticles that are monofunctionalized regarding the recognition element are important for this type of a self-replicating monolayer system. If the replicating monomer nanoparticles are not monofunctionalized with regards to the recognition element, forming multilayers and/or polymeric chains of the replicating monomers will become problematic due to unwanted cross-linking. The patent family of Hainfeld et al (U.S. Pat. No. 5,521,289, Hainfeld et al. (1996); U.S. Pat. No. 6,121,425, Hainfeld et al. (2000)) discloses methods for making monofunctionalized nanoparticles that involve HPLC purification and various precipitations. Various statistical methods can also be envisioned for obtaining monofunctionalized nanoparticles (which can otherwise be fully functionalized with the cross-linking ligands). Other suitable methods for making monofunctionalized nanoparticles are described in co-pending U.S. Pat. Application Ser. No. 10/621,790, (*"Nanoparticle chains and preparation thereof"*, Jacobson et al, July 17, 2003).